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ABSTRACT

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A continuous time-of-flight mass spectrometer having an evacuated enclosure with means for generating an electric field located in the evacuated enclosure and means for injecting a sample material into the electric field. A source of continuous ionizing radiation injects ionizing radiation into the electric field to ionize atoms or molecules of the sample material, and timing means determine the time elapsed between arrival of a secondary electron out of said ionized atoms or molecules at a first predetermined location and arrival of a sample ion out of said ionized atoms or molecules at a second predetermined location.